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considered as the foundation and guide for politics we cannot understand. If Mr. Yeaman means that a man, to properly study political questions, ought to be endowed with a conscience, he is unquestionably right, and we strongly suspect that this is the only meaning which can be extracted from the sentence. As to the latter branch of it, what is the "natural pattern" of a man? Mr. Yeaman surely does not mean that the differences in the physical stature of mankind are solely due to their traditions and their artificial political contrivances. The book is full of such passages as this. For example, the first chapter, which deals with definitions of government and law, is very bad; it certainly ought never to have been written by a student of Austin. But, as we before said, we have no desire to rivet the attention of the reader upon Mr. Yeaman's deficiencies. His book shows an honest and intelligent mind. We trust that it may prove the herald of what its title signifies, for it is indeed time to return to the study of government. Little will it avail our descendants to know that their fathers extended liberty and vindicated the unity of their country, if at the same time they learn that these gains were made at the expense of their subjection to the tyrannous misrule of ignorance. If we would not present to the world the melancholy spectacle of a people too ingenious for government, too subtle for law, and too liberal for anything save anarchy, by all means let us return to the study of government. There are indications enough that we have neglected it. At the North, the capital of the country abandoned to corruption and intrigue, and our principal city under the control of a triumvirate of thieves; at the South, violence and rebellion stalking over the country; strange and foul customs establishing themselves under the flimsy pretence of religious sanction on our Western border; our Eastern coast one vast port of entry for hordes of ignorant barbarians, — is it not time that we should turn from our shameless pæan of exultation over the superiority of America to all other countries, and confess in humility that even Americans may have still something to learn?

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4. — *United States Geological Exploration of the Fortieth Parallel.* By CLARENCE KING, Geologist in Charge. *Mining Industry, by* JAMES D. HAGUE; *with Geological Contributions, by* CLARENCE KING. Submitted to the Chief of Engineers and published by Order of the Secretary of War under Authority of Congress. Illustrated by Thirty-seven Plates and accompanying Atlas. Washington: Government Printing Office. 4to. pp. 647. 1870.

THIS, as we are informed in a prefatory note, is the *third* volume in the series of the "Geological Exploration of the Fortieth Parallel," although the first in the order of publication; first, because most generally interesting to the public, which looks first at questions of dollars and cents, and first, also, because, being something of a monograph in its character, it could be readily finished up at once, without waiting for the final results of the whole exploration. The other volumes of the series, four in number, are to be as follows: I., Systematic Geology; II., Descriptive Geology; IV., Zoölogy and Palæontology; V., Botany.

The volume before us is a superb quarto, on heavy tinted paper, if anything rather too ponderous, while the illustrations, both those incorporated in the text and those of the Atlas, are extremely well and clearly engraved and printed in colors. The longitudinal and cross sections of the mines on the Comstock Lode, which are complicated and required much technical skill for their execution, are admirably done, and, indeed, are in no respect inferior to any work of the kind which has ever been published. These, as well as all the other illustrations, were engraved and printed under the superintendence of Mr. Julius Bien of New York, who deserves the hearty thanks of geologists and mining engineers for the pains he has taken to do the work in a satisfactory manner. In a book like this, so much depends on the care and precision with which the maps and sections are executed, that we cannot be too thankful that, as is most frequently the case in this country, the text has not been rendered almost useless by the worthlessness of the illustrations.

The "Survey of the Fortieth Parallel" was begun in 1867 and is still in progress, the work having now reached the meridian of Fort Bridger in its easterly advance from the western borders of Nevada. The belt of country surveyed, explored, and mapped, both topographically and geologically, is over a hundred miles broad in a north and south direction, and follows, somewhat irregularly, the course of the Central Pacific Railroad. The work was authorized by Congress, and placed under the general direction of the United States Engineer Corps, but with the express stipulation, on the part of Congress, that Mr. King should be the chief, he and all his corps being civilians. It is not necessary to investigate by what "happy accident" it was brought about that a work of such importance should be inaugurated, or how it came to be placed in charge of a competent person, and carried on uninterruptedly until important results had been attained. Previous to the Fortieth Parallel Survey there had never been any portion of the vast territory belonging to our government mapped with accuracy, except the fringe around our ocean border and the Great Lakes, which comes within the domain of the Coast and Lake Surveys. All the numerous expeditions to the Far West which preceded the one directed by Mr. King had been of the nature of simple reconnaissances, interesting as giving the first rude outlines of the geography of previously unknown regions, but of no permanent value, since never based on any systematic triangulation, being only rough sketches taken on horse or mule back, checked by occasional astronomical determinations, and these usually made with the poorest of instruments and under circumstances the most unfavorable to precision. The collections in natural history made by all the earlier reconnaissances were valuable as furnishing material to be worked up by our zoölogists and botanists at Washington and elsewhere ; while the geological information obtained by these expeditions, and especially that which was carried on at such enormous expense, from 1852 to 1856, for the purpose of exploring a route for the Pacific Railroad, was almost worthless, partly on account of the ignorance and inexperience of the persons employed in that department, and partly because the country was traversed with such rapidity that no maps could be prepared on which to lay down the geological observations with an approach to accuracy.

In the work directed by Mr. King, on the other hand, a careful and accurate triangulation has been extended over the whole area surveyed, while the topography has been elaborated with a minuteness of detail which will not only give to the chartographic work of the survey a permanent value as furnishing the first trustworthy representation of the geography of a highly important portion of our vast territory, but which will also give some meaning to the geological results, which, if not based on accurate geography, are, in fact, almost worthless.

The completion of the topographical maps now in the engraver's hands, and the issuing of them and of the corresponding volumes of text, geological and other, will undoubtedly afford us an opportunity for further remarks in this direction ; at present we have to do with a volume of "Mining Industry," one in which topography and general geology play quite a subordinate part.

This volume is, indeed, almost a monograph of the "Comstock Lode," more than three fifths of it being devoted to the geology, exploitation, and metallurgic treatment of the ores of that celebrated mineral vein. The remainder of the volume is chiefly occupied by a discussion of some of the other important mining districts in Central and Eastern Nevada, especially those of Reese River and White Pine. In a special chapter the coal basin of Green River in Wyoming is described, and a review of the mining interests of Colorado forms the conclusion of the volume. The chapters on the geological structure of the Comstock Lode and the Green River Coal Basin are by Mr. King ; the remainder of the work is by Mr. James D. Hague, with the exception of a chapter on the chemistry of the method of amalgamation in pans, commonly known as the Washoe process, by Mr. Arnold Hague, and shorter contributions in regard to some of the less important districts in Eastern Nevada by the last-named gentleman and by Mr. S. F. Emmons.

It is hardly possible for us at this distance, in miles and time, to understand what an important event was the discovery, in 1859, of the Comstock Lode, at a point not far east of the boundary of California, in what is now known as the State of Nevada, but which at that time was to white men only a nameless portion of the Great Basin. It was then roamed over by a few Indians of the Pah-Ute tribe, who got a scanty living from grasshoppers and the seeds of the nut pine (the one-leaved, or Fremont's pine). These pines and a few junipers sparsely distributed along the crests of the ranges formed the only arboreal vegetation of the region, which was called by the Pah-Utes "Washoe"; and by this name the whole country about the Comstock Lode was, and is still, known to Californians. Instead of retaining the name of Washoe and using it to designate the State of silver-mines, the legislature stupidly rejected it and adopted that of Nevada (snowy), which is in every respect inapplicable to a region of sand and sage-brush. Besides, as there was already a county and a town in California of that name, the confusion arising from this reduplication is endless.

The discovery of the Comstock Lode took place just at the time when the placer mines of California had become pretty thoroughly exhausted, when confidence in quartz-mining was sorely shaken by repeated failures, with only a few successes to balance them, when the Pacific Railroad was beginning to be seriously talked of, while nobody could see how a line of railway could be built and supported across the interminable, uninhabited, hideous region of the Great Basin. Just as the picking up of a nugget of gold at Sutter's Mill in California turned an overwhelming tide of emigration to the Pacific coast, so the discovery of some black-looking, heavy fragments of stone in Comstock's rocker, which soon afterwards were recognized as rich silver ore, opened the Great Basin to settlement, led to innumerable other discoveries, and these to a feverish, or even furious, spasm of speculative excitement, during which roads and stage lines traversed the region in every direction, while mining camps, towns, and even cities shot up like mushrooms, where it had seemed before that no inducement could be found for the emigrant to tarry one moment longer than was absolutely necessary. Discovery succeeded discovery, until, within three or four years after the Comstock Lode was opened, there was a line of mining settlements extending all the way from the California line to Great Salt Lake. What easier now than for the Pacific Railroad to thread its way through these? Even the local trade alone demanded railroad facilities; and what gold has done for steam communication by water and across the Isthmus, that silver was now to do for direct transit, "all rail," across the continent.

Among all the interesting new occurrences of metallic ores and minerals which the explorations of the past ten years have revealed within the limits of the Great Basin, there is none so remarkable as the Comstock Lode, whether we consider it from the point of view of its commercial importance or from that of its scientific interest. Indeed, it is doubtful if any one vein ever yielded so large returns within so short a period. Over a hundred millions of dollars have been extracted from it in the ten years since it began to be worked, and this sum is almost half as much as the Veta Madre of Guanaxuato, the typical mother vein of the world, yielded during sixty-three of its most productive years. It is more than the entire yield of the Freiberg mines during the whole time for which records have been kept, or for nearly three hundred and fifty years.

This productiveness is due in part to the enormous size and richness of the vein, but also, in part, to the immense activity displayed in getting possession of its hidden treasures by the companies into whose hands it has passed. The machinery by which the various mines are drained and the ore raised to the surface is ponderous, costly, and much of it admirably well contrived. The contrivances employed in separating the precious metals from the rocky gangue in which they and their ores are disseminated, and the processes used for extracting them from their combination with the sulphur and other mineralizing substances with which they are chemically combined, are in many respects peculiar, and have been carefully studied and described in this volume, by Messrs. J. D. and A. Hague. To enter into any detail with regard to them in this place would hardly be suitable. The volume will be a standard book of reference for all mining engineers and metallurgists who wish to know what of importance has been done in their departments.

The general public will be chiefly interested to learn how productive this great lode now is, and what the prospects of its future may be. Does it now yield at the rate of sixteen millions a year; if not, why not; and will it ever do so again? These are questions replete with interest, and they have been brought prominently before the people by the persistent efforts of a person named Sutro, to make it appear that it is a matter of national importance that a deep adit-level, or "tunnel," as such excavations are, in sheer disregard of previous good usage, getting more and more to be called, should be run to work the

Comstock Lode to great depths. For this purpose the loan of the credit of the United States, to the extent of several millions, has been asked, on the ground that the productiveness of the lode will be so greatly increased by the proposed deep working, that the government will be the gainer, since this increase will be so enormous that the value of the precious metals will be rapidly accelerated in its fall, and the amount of our national debt thus be indirectly decreased.

Three questions, therefore, come up in this connection: *First*, Will the value of the lode, at great depth, be best proved by an adit-level or by the shafts which are now sinking upon it? *Second*, Is the lode likely to prove in depth of anything like the same value and richness which it has now or formerly had? And *third*, If proven to hold its richness at great depths, will it be most economically worked by means of the proposed deep adit, or tunnel, rather than by means of shafts, or will this adit be a necessary auxiliary to the shafts?

It is evident that if the second of these questions can be answered at once in the negative, then the others need not be answered at all. If in the affirmative, then the first question needs to be settled; that is, if the vein is not certain to hold its richness in depth, then the question whether it will, or not, is one which can only be determined by actual working, or by laying the ground open to inspection; and, if this can only be done by a deep level, then the question would be one of probabilities; or is it sufficiently probable that the vein will hold in richness at depth to make it worth while that the expense of driving a deep level should be incurred? If, on the other hand, the character of the vein at depth can be as well ascertained by the shafts which are now sinking, then running the tunnel as an exploring work would be an entirely unnecessary expense. The third question, then, whether the vein could best be worked through the deep adit or by means of shafts, need not necessarily be answered until after it has been settled that it will be worth working at all.

From an examination of the work of Messrs. King and Hague, with special reference to the question of the "Sutro Tunnel," as the projective deep adit is generally called, the data are obtained without difficulty for answering the questions suggested above. In the first place it is clearly seen that the lode is rapidly diminishing in width, the two outside walls between which the ore channel is enclosed everywhere converging in depth. Indeed, it appears that the productiveness of the lode is already seriously diminished; so much so, that the bullion product of 1869 was less than half the annual average from 1860 to 1867. More than this, almost the whole of the present yield is obtained from the old ground near the surface, by taking out low-grade ores, which can now be worked with profit, owing to the increased facilities furnished by railroads and other improvements. As Mr. Hague remarks, "the deeper explorations of those mines which furnished large products from ground within five hundred or six hundred feet of the surface, such as the Ophir, Gould and Curry, Chollar-Potosi, Empire, and Imperial, have thus far afforded little or no encouragement." This being the case, it would seem that the answer to the second question suggested above will almost certainly have to be in the negative, and that it must be admitted that the lode does not hold out in depth with anything like the same richness which it had near the surface, and that it is not likely to regain, much less surpass, its former yield. Still, so remarkable a lode should be explored in depth, no matter how unfavorable the conditions may now appear to be, since no one can say positively that these conditions may not change for the better at some points, and that there may not be portions of the lode capable of being worked to great depth with profit. Shall this exploration be done by means of the shafts now being sunk on the lode by various companies at work on it, or by one deep adit driven by another and a distinct company, at a cost so great, it is claimed, that the assistance of the national government, to the amount of several millions, must be had? To this question Mr. Hague furnishes the following answer: "The demand for, or usefulness of, the tunnel depends entirely on the value of the lode in depth; and the question now pending as to this value is likely to be answered sooner, more fully, and at less cost by the several deep shafts, which are now being sunk from the surface downward, than it can be by any other means." (p. 166.) That this statement would entirely accord with the views of all skilful and disinterested mining geologists we have no doubt.

In view of the above facts, is it not a remarkable illustration of the way things are managed at Washington, that a commission has been authorized by Congress to inquire into the feasibility and desirability of the Sutro Tunnel, and that this commission does not include among its three members a single mining engineer or geologist? Two of them are military engineers, and the third a medical man, although the resolution of Congress authorizing the Commission especially required the President to appoint as this third man a mining engineer or geologist. Thus it appears that, to pass an opinion on a matter which may affect the public purse to the extent of several millions, and which at all events opens questions for discussion in mining geology of the greatest practical and scientific importance, three persons are called in who are in no respect qualified, either by experience or education, to meddle with such subjects. And yet it would be admitted by all who are competent to form an opinion in such matters, that there could be no investigation undertaken for which special training and knowledge were more required than this very one. It is a shame that political influences should have been allowed to thus override both Congress and common sense. The odor of San Domingo which hangs about this appointment is apparent.

To return, however, to the work from which we were led into this digression on a subject which happens just at this time to be of special practical importance. It may safely be said that the volume is in all respects a trustworthy and creditable one, and well worthy to be placed by the side of that other admirable engineer paper, the report of Messrs. Humphreys and Abbot on the Physics and Hydraulics of the Mississippi River. It may confidently be anticipated that the other volumes of the series will form a very important addition to the scientific literature of the world. We cannot but hope that the day of crude reconnaissances and helter-skelter geological work, under government auspices, is nearly past, and that the example of thoroughness set by Mr. King, under the superintendence of the Engineer Bureau, may be imitated in some of the other departments at Washington.

5. — *Diary of the Besieged Resident in Paris.* Reprinted from the "Daily News," with several new Letters and Preface. London: Hurst and Blackett. 1871.

On the 19th of September, 1870, Paris was invested; on the 28th of January, 1871, it surrendered. The history of this period of four months has been given to the world by many correspondents of many newspapers, but no account has attained the same notoriety as the "Diary of the Besieged Resident." Few of these letters had made their appearance in the "Daily News," before it was currently reported that their author was Mr. Henry Labouchère, of whose previous literary efforts nothing was known, except the fact that he had contributed one or two letters to the newspaper of which he was a joint proprietor. No one, however, can read the volume before us, and fail to be struck by the excellent style in which it is written. The sentences are admirably composed, the English terse and clear, the narrative easy and connected, while the humor which runs throughout the whole of it gives to it a special interest. What its value will be to the Gibbon or Froude of the next century we will not venture to say; but amidst the many contradictory and voluminous works through which he will have to wade, here at least he will find some repose from his labors. In other